

Remarks

Reconsideration and withdrawal of the rejections set forth in the Office Action are respectfully requested in view of the foregoing amendments and the following remarks:

The rejections of all claims under 35 U.S.C. 103 have been obviated by cancellation of Claims 1, 2 and 11 and substitution of new Claim 21, taken with appropriate amendment of the dependencies of the remaining claims. The rejection of Claim 15 under 35 U.S.C. 112 has also been obviated by the amendments currently introduced.

New Claim 21 incorporates into Claim 1 the subject matter of Claims 2 and 11, together with subject matter requiring an output of the alternator to be (directly or indirectly) electrically connected to the first portion (103) and to the second portion (105) of the drill collar (101). This arrangement is shown, for example, in Figures 18, 20, 22, and 24 of the specification, and is further described in the corresponding text. For the avoidance of doubt, it is to be noted that the term "electrically connected" is used at page 27, lines 3-4, of the International Application, as published.

It is the Examiner's contention that all originally submitted claims would have been obvious to one of ordinary skill in the art over WO 02/12676 (Nicholson) in view of U.S. patent 5,517,464 (Lerner et al.). It is respectfully submitted that Claim 21 is patentable over the prior art for a number of reasons:

Firstly, Nicholson teaches that transmission is by way of a plurality of toroids 52 (see page 16, lines 30-31), which are located within drill collar 23, with insulator sub-assemblies (subs) 22 at the top and bottom of the drill collar 23. A turbine/alternator is provided as part of a power module 43, but there is no suggestion of any electrical relationship between the turbine/alternator and the toroids. Indeed, the toroids 52 are said at page 17, lines 29-30, to be driven by a data communication module 28.

In particular, there is no disclosure and no suggestion in Nicholson of an output of the alternator being electrically connected to two drill collar portions, which are electrically insulated from each other, so as to transmit an electrical signal represented by the output of the alternator. Claim 21 clearly and nonobviously distinguishes over Nicholson, and the deficiencies of the reference are not cured by Lerner et al.

Lerner et al. provide an integrated modulator and turbine-generator for an MWD tool which sends signals by way of pressure pulses in the drilling mud. The turbine-generator includes an alternator 64 which is provided with a braking mechanism that incorporates field effect transistors (FETs) 96, 98, 100, which selectively short-circuit the stator windings 80, 82, 84 of the alternator. As can be seen from Figures 5b and 5c, such a braking mechanism disrupts the output of the alternator.

The Examiner has suggested that Lerner et al. should be combined with Nicholson in order to control the speed of rotation of the alternator. To the

contrary, however, there is no reason to control the speed of the alternator in Nicholson. Power is stored in a rechargeable battery, which in turn is recharged by the alternator irrespective of the speed of rotation thereof. There is no link between the alternator and the transmission of signals, and therefore no need to control the speed of rotation of the alternator.

More particularly, according to Nicholson, at page 17, lines 21-28, the voltage and frequency output of the alternator varies widely. This is of no significance, however, because the alternator output is rectified, filtered and regulated to supply a stable (DC) power output to power the electronic modules and to charge a battery. Any control of the speed of rotation of the alternator would therefore have no effect on the outputs of either the battery or the electronic modules because all they receive is a regulated power supply rather than a signal containing information which is to be transmitted by the toroids.

Thus, the combination of Nicholson and Lerner et al. is without proper motivation. It is unwarranted, and unjustified.

Moreover, even if the combination of Nicholson with Lerner et al. were proper it would provide no teaching or suggestion that an output of an alternator could be electrically connected to two drill collar portions which are electrically insulated from each other so as to transmit an electrical signal represented by the output of the alternator, as claimed by Applicant. New Claim 21, and the claims dependent thereon, are manifestly novel and patentable over the prior art.

A petition for three-month extension of time for response, together with the requisite fee authorization, is enclosed.

Passage of the application to allowance is believed to be clearly in order, and is earnestly solicited.

Respectfully submitted,
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CERTIFICATE OF MAILING

I, IRA S. DORMAN, hereby certify that this Amendment is being deposited with the United States Postal Service, First Class mail, postage prepaid, in an envelope addressed as set forth on the first page hereof, on November 9, 2007.



cc: Derek C. Jackson, Esq.
(Ref: P0796)